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July 31, 1995 95-RF-06050

Jessie M. Roberson, Assistant Manager
Environmental Restoration
DOE, RFFO

TRANSMITTAL OF THE OPERABLE UNIT 11 PRELIMINARY DRAFT CORRECTIVE ACTION DECISION/RECORD OF DECISION - TGH-197-95

Action: Review and comment on the enclosed Preliminary Draft Corrective Action Decision/Record of Decision.

The purpose of this correspondence is to formally transmit the Operable Unit (OU) 11 Preliminary Draft Corrective Action Decision/Record of Decision to the Department of Energy, Rocky Flats Field Office for review and comment. This document is being provided prior to the completion of the Public Comment Period and consequently does not include a Responsiveness Summary. Initiating the review process at this time is required to support the current OU 11 working schedule.

If you have any questions concerning this correspondence, please contact Dan Booco of Rocky Mountain Remediation Services at extension 8549.

T. G. Hedahl, Director
ER.WM&I Operations

DAB:dql

Enclosure:
As Stated

Orig. and 1 cc - J. M. Roberson

cc:
D. A. Booco - RMRS (w/o Enclosure)
R. C. Fitz - " " "
J. E. Law - " " "
J. L. McAnally - " " "
A. M. Parker - " " "
D. L. Schubbe - " " "
ER Records (2)
RMRS Records

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PRELIMINARY DRAFT
CORRECTIVE ACTION DECISION/
RECORD OF DECISION

OU 11: West Spray Field (IHSS 168)

July 1995

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CORRECTIVE ACTION DECISION/RECORD OF DECISION DECLARATION

Site Name and Location

Rocky Flats Environmental Technology Site Operable Unit 11: West Spray Field
Golden, Jefferson County, Colorado

Statement of Basis and Purpose

This decision document presents the selected remedial action/corrective action for the Rocky Flats Environmental Technology Site Operable Unit (OU) 11: West Spray Field, located near Golden, Colorado. The selected remedial action was chosen in accordance with the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) of 1980, as amended by the Superfund Amendments and Reauthorization Act (SARA) of 1986, the Colorado Hazardous Waste Act (CHWA) and, to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). The Resource Conservation Recovery Act (RCRA) is administered through the CHWA by the Colorado Department of Public Health and the Environment (CDPHE). OU 11 was investigated and a Preferred Alternative was selected in compliance with the Federal Facility Agreement and Consent Order Inter-Agency Agreement (IAG) signed by the U.S. Department of Energy (DOE), the State of Colorado, and the U.S. Environmental Protection Agency (EPA) on January 22, 1991.

Description of the Selected Remedy

OU 11: West Spray Field is composed of one Individual Hazardous Substance Site (IHSS), IHSS 168. The preferred alternative for OU 11 consists of "No action". The No Action decision for OU 11 is based upon the NCP, which provides for the selection of a No Action alternative when a site or OU is in a protective state. The risk evaluation performed in the RCRA Facilities Investigation/CERCLA Remedial Investigation (RFI/RI) Report determined that OU 11 was in a protective state and presented no unacceptable risk to human health and the environment.

Declaration Statement

DOE has determined that no remedial action is necessary to be protective of human health and the environment at Rocky Flats Environmental Technology Site Operable Unit 11: West Spray Field. Because the remedy will not result in hazardous substances remaining onsite above health-based levels, a five year review is not required.

_____ _____

Mark N. Silverman, Manager — Date
U.S. Department of Energy, Rocky Flats Field Office

_____ _____

Jack W. McGraw — Date
Deputy Regional Administrator, Region VIII
U.S. Environmental Protection Agency

_____ _____

Thomas P. Looby, Director, Office Of Environment, — Date
Colorado Department of Public Health and Environment

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DECISION SUMMARY

Site Name, Location, and Description

Rocky Flats Environmental Technology Site (Rocky Flats) is located north of the City of Golden in northern Jefferson County, Colorado. A site location map is attached (See Figure 1). Most Rocky Flats structures are located within the industrialized area of Rocky Flats, which occupies approximately 400 acres. Rocky Flats is surrounded by a buffer zone of approximately 6,110 acres (See Figure 2). OU 11 occupies 105 acres within the western buffer zone.

Rocky Flats is located along the eastern edge of the southern Rocky Mountain region, immediately east of the Colorado Front Range. The site is located on a broad, eastward-sloping pediment that is capped by alluvial deposits of Quaternary age (i.e., Rocky Flats Alluvium). The tops of alluvial-covered pediments are nearly flat but slope eastward at 50 to 200 feet per mile (EG&G, 1992). The topography of OU 11 is relatively level with an approximately 2% eastward slope, contrasting dramatically with the foothills to the west and the incised drainages to the east. The elevation of OU 11 ranges from approximately 6,140 feet above mean sea level (msl) on the west to approximately 6,080 feet above msl on the east.

At Rocky Flats, the alluvial-covered pediment surface is dissected by a series of east-northeast trending stream-cut valleys. The valley floors containing Rock Creek, North and South Walnut Creeks, and Woman Creek lie 50 to 200 feet below the elevation of the older pediment surface. These valleys incise into the bedrock underlying alluvial deposits, but most bedrock is concealed beneath colluvial material accumulated along the gentle valley slopes. Rock Creek, North and South Walnut Creeks, and Woman Creek are intermittent streams that flow generally from west to east and drain excessive water collected at Rocky Flats. Retention ponds are located in each of the creeks downstream of the main site. Rock Creek surface water flows northeast to the Rock Creek confluence with Coal Creek. Surface water within North and South Walnut Creeks, which is not retained within retention ponds used for spill control, flows to Great Western Reservoir. Surface water within Woman Creek, which is not diverted to Mower Reservoir, flows to Standley Lake. OU 11 is located between the Woman Creek and Walnut Creek drainages but is not dissected by either creek. No surface water bodies exist within OU 11. Surface water impoundments located nearby are the clay pits to the west, the Raw Water Pond to the southeast and impoundments to the northeast associated with McKay and Church ditches. However, none of these impoundments directly contribute to surface flow at OU 11 or collect surface flow from OU 11.

The population, economics, and land use of areas surrounding Rocky Flats are described in a 1989 Rocky Flats vicinity demographics report prepared by the Department of Energy (DOE) (U.S. DOE, 1991a). Land use within 0 to 10 miles of Rocky Flats has been divided within the demographics report into residential, commercial, industrial, parks and open space, agricultural and vacant, and institutional classifications. Most residential use within five miles of Rocky Flats is located immediately northeast, east, and southeast of Rocky Flats. Commercial development is concentrated near residential developments north and southwest of Standley Lake and around Jefferson County Airport, located approximately three miles northeast of Rocky Flats. Industrial land use within five miles of the site is limited to quarrying and mining operations. Natural resources associated with the quarrying and mining activities include gravel and coal. Open-space lands are located northeast of Rocky Flats near the City of Broomfield and in small parcels adjoining major drainages and small neighborhood parks in the cities of Westminster and Arvada. The west, north, and east sides of Standley Lake are surrounded by open space. Irrigated and nonirrigated croplands, producing primarily wheat and barley, are located north and northeast of Rocky Flats near the cities of Broomfield, Lafayette, Louisville, and Boulder and in scattered parcels adjacent to the east boundary of the site. Several horse operations and small hay fields are located south of Rocky Flats. The demographic report characterizes much of the vacant land adjacent to Rocky Flats as rangeland. OU 11 is undeveloped and unused.

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Site History and Enforcement Activities

Rocky Flats is a government-owned, contractor-operated facility, which is a part of the nationwide Nuclear Weapons Complex. The site was operated for the U.S. Atomic Energy Commission (AEC) from its inception during 1951 until the AEC was dissolved during 1975. Responsibility for Rocky Flats was assigned to the Energy Research and Development Administration (ERDA), which was succeeded by DOE during 1977. Previous operations at Rocky Flats consisted of fabrication of nuclear weapons components from plutonium, uranium, and nonradioactive metals (i.e., stainless steel and beryllium).

Between April 1982 and October 1985, OU 11 was used for periodic spray application of excess liquids pumped from Solar Evaporation Ponds 207-B North and 207-B Center as a means of evaporating waste water. When the storage capacity of one of these ponds was reached, the liquids were pumped to OU 11 via an aboveground pipeline for spray application. The sources of waste water stored in the Solar Evaporation Ponds and sprayed at OU 11 included effluents from the Sewage Treatment Plant and water collected in the Interceptor Trench System. Approximately, 66 million gallons from the Solar Evaporation Ponds were sprayed at OU 11. The pond liquids contained elevated levels of nitrates, metals, radionuclides, volatile organic compounds and semivolatile compounds.

Various studies were conducted at Rocky Flats to characterize environmental media and to assess the extent of radiological and chemical contaminant releases to the environment. The investigations performed before 1986 were summarized by Rockwell International (1986a). During 1986, two investigations were completed at the site. The first was the DOE Comprehensive Environmental Assessment and Response Program (CEARP) Phase I Installation Assessment *(U.S. DOE, 1986)*. A number of sites that could potentially have adverse impacts on the environment were identified and designated as Solid Waste Management Units (SWMUs) within the CEARP of Rocky Flats. A result of this investigation was that OU 11 was identified as a SWMU because of spray application of liquids from the Solar Evaporation Ponds. The second investigation involved a hydrogeologic and hydrochemical characterization of Rocky Flats (Rockwell International, 1986b).

On January 22, 1991, a Federal Facility Agreement and Consent Order (i.e., the Interagency Agreement (IAG)) was signed by DOE, EPA Region VIII, and the State of Colorado. Within the IAG, the SWMUs were changed to IHSSs and one IHSS was assigned to OU 11, IHSS 168. The boundaries of OU 11 and IHSS 168 coincide. As per the IAG, draft and final Work Plans, and draft and final RCRA Facility Investigation/Remedial Investigation (RFI/RI) Reports were prepared and submitted to the regulatory agencies. The RFI/RI Report for OU 11 was defined by the Statement of Work (Attachment 2 of the IAG) to fulfill the IAG requirements for submittal of documentation and data necessary to determine if the risk from OU 11 warrants the need for remedial action.

The IAG scope of work was incorporated in its entirety within the Colorado Hazardous Waste Permit (CHWP) for Rocky Flats. Upon signature of the Corrective Action Decision/Record of Decision (CAD/ROD) by DOE, EPA, and the State of Colorado, the State shall modify the CHWP for Rocky Flats to incorporate the signed CAD/ROD for OU 11.

Highlights of Community Participation

Results of the Combined Phases RFI/RI for OU 11 were presented to the public at the Rocky Flats Technical Review Group meeting on May 11, 1995. A public comment period was held concurrently for the *Proposed Plan and Draft Modification of CHWP for Rocky Flats OU 11: West Spray Field (IHSS 168)*. The public comment period was held from June 28, 1995 to August 28, 1995. At a public hearing conducted on July 19, 1995, public questions regarding the *Proposed Plan and Draft Modification of CHWP for Rocky Flats OU 11: West Spray Field (IHSS 168)* for OU 11 were answered but no formal public comments were made at this hearing. Written comments have been received and have subsequently been responded to within this CAD/ROD.

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Scope and Role of Operable Unit 11 within Site Strategy

The scope, defined for OU 11 within Table 5 of the IAG, includes submittal of documentation and data required to close the regulated units in accordance with the IAG. The RFI/RI work plans and reports were completed and submitted in accordance with the requirements specified within Table 5 and Table 6 of the IAG. No remedial action is required for OU 11 because the RFI/RI performed and documented in the Operable Unit 11 Combined Phases RFI/RI Report, determined that OU 11 is in a protective state, i.e., OU 11 poses no current or potential threat to human health or the environment.

Site Characteristics

The uppermost water bearing unit at Rocky Flats is unconfined and consists of surficial deposits (i.e., Rocky Flats Alluvium, colluvium, valley-fill alluvium, fill material, and disturbed ground), weathered bedrock units, and subcrops of the Arapahoe and Laramie Formations. The bedrock underlying Rocky Flats can be considered an aquitard. The direction of ground water flow within the surficial deposits is generally from west to east beneath OU 11. Recharge to the surficial water-bearing unit occurs primarily from precipitation. Discharge from the surficial water-bearing unit occurs primarily at minor seeps. Seeps occur in colluvial deposits that cover the contact between the alluvium and bedrock along the edges of the valleys. Discharge also occurs through seepage into other surficial and weathered geologic formations and through evapotranspiration.

The spray application of Solar Evaporation Pond liquids between April 1982 and October 1985, is the only known or suspected source of contamination at OU 11. The RFI/RI conducted in 1994, identified nitrate/nitrite, tritium, plutonium-239/240 and americium-241 as Potential Contaminants of Concern (PCOCs) in soils. Rocky Flats Programmatic Preliminary Remediation Goals (PPRGs) served as the basis for toxicity and/or carcinogenity evaluations of the PCOCs. The PPRGs are based on a one in one million carinogenic risk and a non-carcinogenic hazard index of one under a residential use scenario. The nitrate/nitrite maximum concentration of 37 mg/kg was compared to the PPRG of 4.39E+05 mg/kg. The tritium maximum concentration of 3.4 pCi/g was compared to the PPRG of 1.47E+04 pCi/g. The plutonium-239/240 maximum concentration of 2.2 pCi/g was compared to the PPRG of 3.42 pCi/g. The americium-241 maximum concentration of 0.43 pCi/g was compared to the PPRG of 2.37 pCi/g. In each case the maximum concentration of the PCOC is less than the corresponding PPRG.

Surficial soils and subsurface geologic materials are the media hosting PCOCs and represent the principal pathways for contaminant migration at OU 11. Physical and chemical characteristics of the OU 11 soils, and the chemical characteristics of the PCOCs determine the mobility of the PCOCs. The chemical characteristics of nitrate support a two-fold fate for the compound. The first fate involves the relatively fast migration of nitrate/nitrite through ground water due to its high solubility in water. The second fate involves the uptake of nitrate/nitrite by nitrogen fixing plants in the area. The higher than normal plant biomass and lack of elevated levels of nitrate/nitrite in ground water indicates that much of the nitrate/nitrite from spray application was bound in surficial soils and associated vegetation before deep infiltration or downward migration could occur. Tritium, would be expected to be mobilized via ground water. However, tritium was not identified as a contaminant in ground water and there is no spatial correlation between tritium in ground water and subsurface geologic materials. The radionuclides americium and plutonium appear to have readily adsorbed to soil particles and have exhibited little migration since the termination of spray activities. Thus, the potential for significant migration of the OU 11 PCOCs appears to be extremely limited.

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Summary of Site Risks

The risks to human health and the environment associated with OU 11 were characterized through the Combined Phases RFI/RI, which was completed in accordance with the requirements presented in the IAG and specifically identified in the Final Phase I RFI/RI Work Plan for OU 11. The Operable Unit 11 Combined Phases RFI/RI Report documents the results of the investigation including an evaluation of risks at the site in detail. Risks at the site have been quantified using the CDPHE Conservative Screen process. At OU 11, four PCOCs were identified in soils, and no PCOCs were identified in other media. The four PCOCs in soil were nitrate/nitrite, tritium, plutonium- 239/240 and americium-241. The concentration of these PCOCs at OU 11 are very low resulting in a CDPHE Conservative Screen ratio sum of less than one and a corresponding risk of less than one in one million. The ratio sum of less than one resulted in identification of OU 11 as a low-hazard site, requiring No Action under a residential use scenario. The screening level ecological risk assessment did not identify any significant ecological effects. An Applicable or Relevant and Appropriate Requirements (ARARs) evaluation was not performed because no PCOCs were identified in ground water, thus there were no applicable requirements for OU 11. In this case, the results of the CDPHE screen were determined to be the best indication that no action was necessary for the site.

Explanation of Significant Changes

No changes in the selected remedy have been made since the release of the *Final Proposed Plan and Draft Modification of Colorado Hazardous Waste Permit for Rocky Flats Environmental Technical Site Operable Unit 11: West Spray Field (IHSS 168).*

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RESPONSIVENESS SUMMARY

Community Preferences
To be incorporated after public comment period.

Integration of Comments
To be incorporated after public comment period.

Appendix A - References

EG&G, 1992: EG&G Rocky Flats, Inc., Phase I Geologic Characterization Data Acquisition - Surface Geologic Mapping of the Rocky Flats Plant and Vicinity, Jefferson and Boulder Counties, Final Report, Golden, Colorado, March 1992.

EG&G, 1995: EG&G Rocky Flats, Inc., Operable Unit 11 Combined Phases RFI/RI Report for the Rocky Flats Environmental Technology Site, Golden, Colorado, June, 1995.

Rockwell International, 1986a: Rockwell International, Annual Environmental Monitoring Report, January-December 1985, Golden, Colorado: Rockwell International, Rocky Flats Plant, Report RFP-ENV-85, 1986.

Rockwell International, 1986b: Rockwell International, Resource Conservation and Recovery Act Part B - Post Closure Care Permit Application for U.S. Department of Energy, Rocky Flats Plant, Hazardous and Radioactive Mixed Wastes, U.S. Department of Energy, unnumbered report, 1986.

U.S. DOE, 1986: U.S. Department of Energy, Comprehensive Environmental Assessment and Response Program Phase I: Draft Installation Assessment, Rocky Flats Plant, Washington, D.C., DOE unnumbered draft report, 1986.

U.S. DOE, 1991a: U.S. Department of Energy, 1989 Population, Economic, and Land Use Data Base for the Rocky Flats Plant, Golden, Colorado, Washington, D.C., DOE, in press, 1991.

U.S. DOE, 1991b: U.S. Department of Energy, Federal Facility Agreement and Consent Order (Interagency Agreement [IAG]: DOE, EPA, and CDH), Washington, D.C., January 22, 1991.

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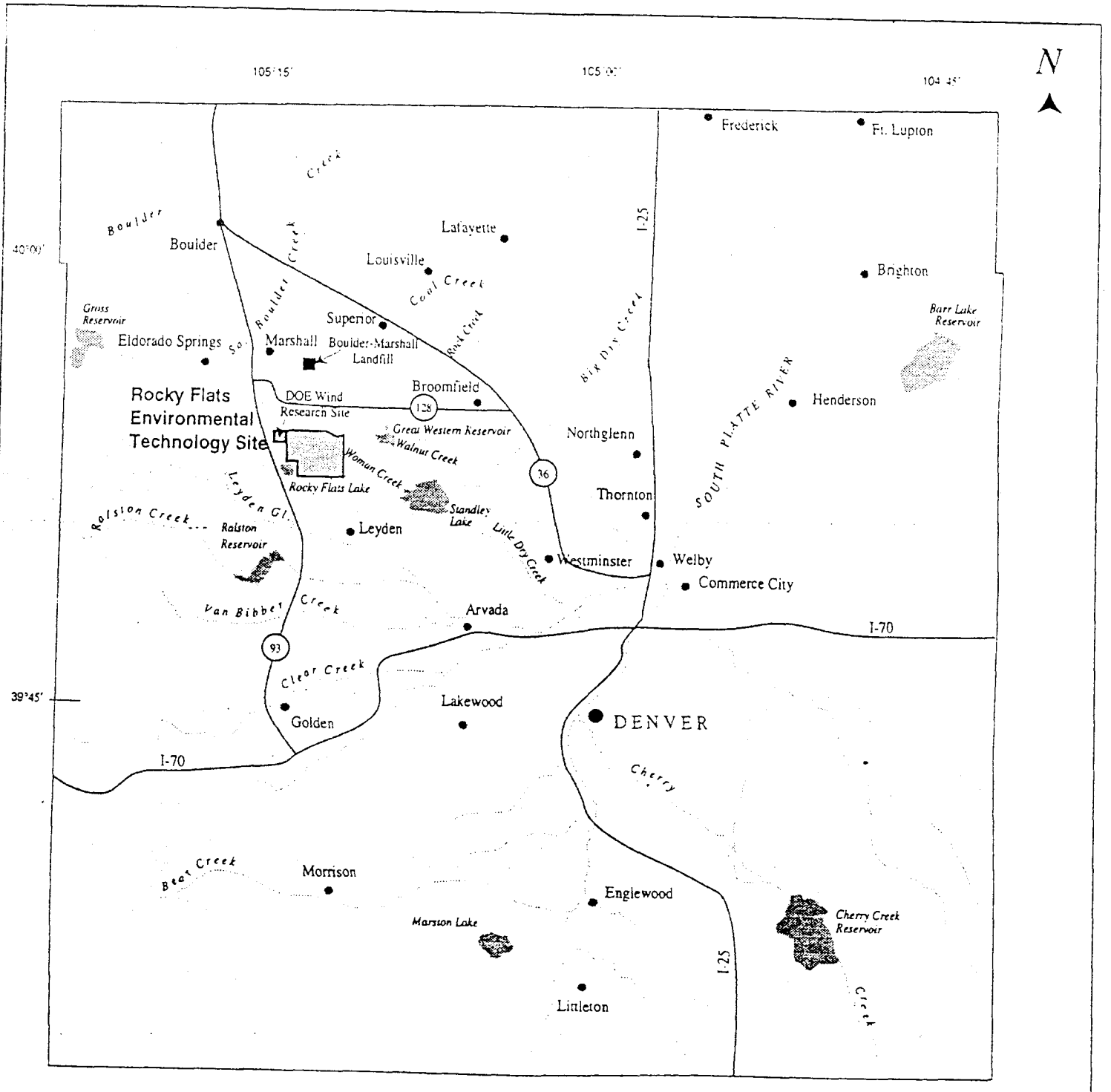

U.S. Department of Energy
Rocky Flats Environmental Technology Site
Golden, Colorado

Location of the
Rocky Flats Environmental
Technology Site

Proposed Plan | Operable Unit 11

May 1995 | Figure 1

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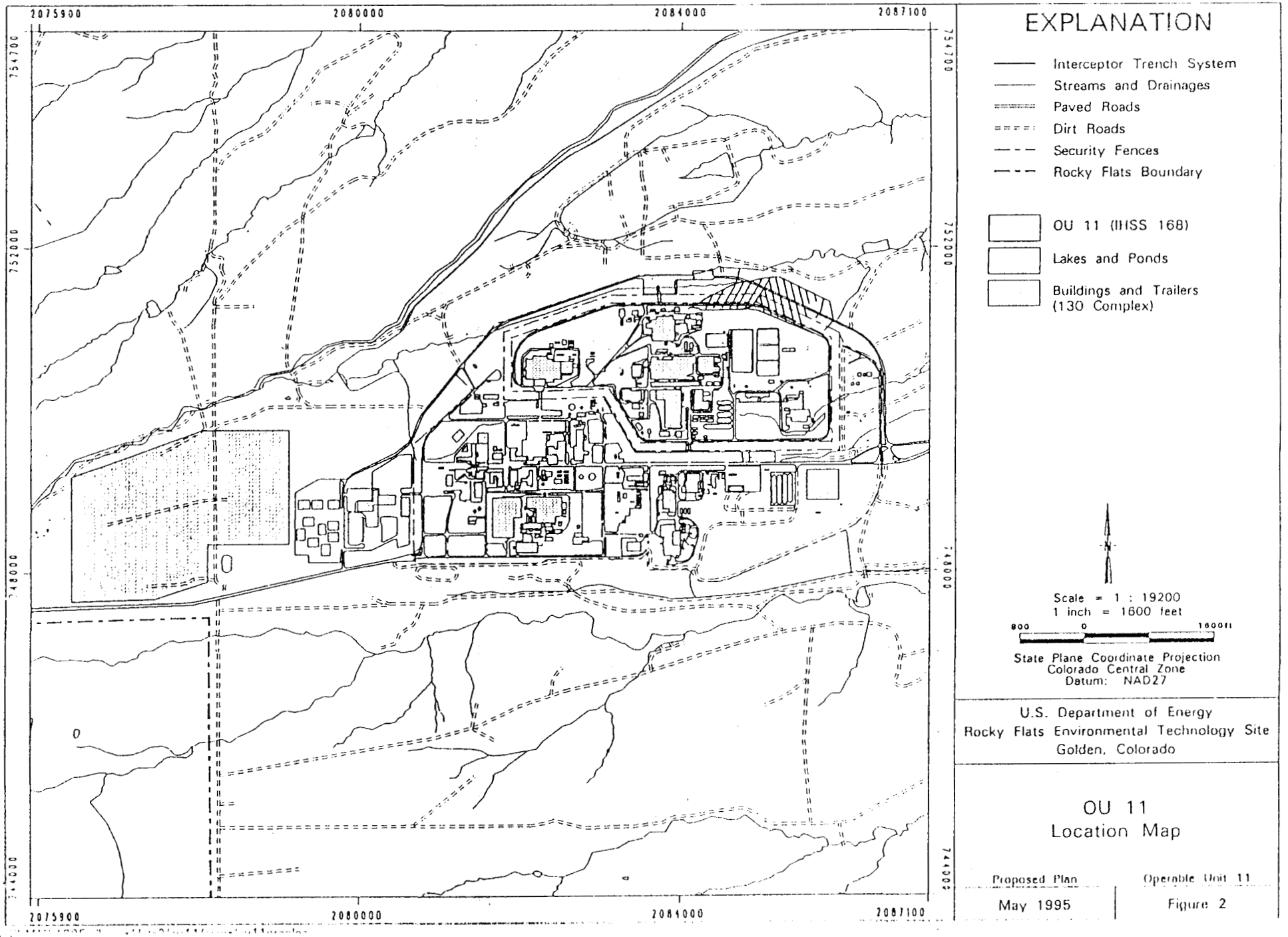
2075900
2080000
2084000
2087100
754700
752000
748000
744300
EXPLANATION
Interceptor Trench System
Streams and Drainages
Paved Roads
Dirt Roads
Security Fences
Rocky Flats Boundary
OU 11 (IHSS 168)
Lakes and Ponds
Buildings and Trailers
(130 Complex)
N
Scale = 1 : 19200
1 inch = 1600 feet
800
0
1600ft
State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27
U.S. Department of Energy
Rocky Flats Environmental Technology Site
Golden, Colorado
OU 11
Location Map
Proposed Plan
May 1995
Operable Unit 11
Figure 2